<u>जल जीवन मिशन अंतर्गत १०० दिवसांचे विशेष अभियान</u>

सर्व ग्रामीण अंगणवाडी केंद्रांना शुध्द पेयजल उपलब्ध करुन देण्याबाबतची कार्यपध्दती

महाराष्ट्र शासन
पाणी पुरवठा व स्वच्छता विभाग
शासन निर्णय क्रमांकः जेजेएम-२०२०/प्र.क्र.११३/पापु ०७
सातवा मजला, गोकुळदास तेजपाल रुग्णालय संकुल,
क्रॅाफर्ड मार्केट जवळ, लोकमान्य टिळक मार्ग, मुंबई
तारीख: २७ नोव्हेंबर,२०२०

<u>वाचा-</u>

१. **शासन निर्णय, पाणी पुरवठा व स्वच्छता विभाग क्र.जजमि-२०१९/ प्र.क्र.१३८/ पापु १० (०७), दि.०४.०९.२०२०**
२. **पेयजल व स्वच्छता मंत्रालय, भारत सरकार यांचे पत्र क्र.११०११/५८/२०२०- JJM- दि.०१.१०.२०१२**

<u>प्रस्तावना-</u>

सन २०१९ पासून जल जीवन मिशनची सुरवात करण्यात आली आहे. राज्यात जल जीवन मिशन राबविण्याकरीता संदर्भिय क्र.१ च्या पत्रान्वये मार्गदर्शक सूचना निर्गमित करण्यात आल्या आहेत. जल जीवन मिशन अंतर्गत ग्रामीण भागातील सर्व कुटूंबांना, शाळा, अंगणवाडीकेंद्रांना तसेच अन्य शासकीय संस्थांना वैयक्तिक नळ जोडणीद्वारे सन २०२४ पर्यंत शाश्वत शुध्द पेयजल उपलब्ध करुन देण्यास शासन कटिबध्द आहे. तथापि,देशातील सर्व शाळा व अंगणवाडी केंद्रामध्ये नळाद्वारे गुणवत्तापुर्ण पाणी पुरवठा उपलब्ध करुन देण्याकरीता मा.पंतप्रधानांनी दि.०२.१०.२०२० पासून १०० दिवसांच्या विशेष मोहिमेची घोषणा केली आहे.

राज्यातील ४४९ ग्रामीण व आदिवासी एकात्मिक बाल विकास प्रकल्पांतर्गत कार्यरत ९३६७५ अंगणवाडी केंद्रांपैकी ५२२६९ अंगणवाडी केंद्रांना सद्यस्थितीत नळाद्वारे पाणी पुरवठा उपलब्ध नाही. अंगणवाडी केंद्रातील लहान मुले, गर्भवती स्त्रिया, स्तनदा माता, किशोरवयीन मुली यांच्या सुरक्षित आरोग्याच्यादृष्टीने २४ तास गुणवत्तापुर्ण पिण्याचे पाणी उपलब्ध असणे आवश्यक आहे. त्याअनुषंगाने जल जीवन मिशन अंतर्गत सुरु करण्यात आलेल्या १०० दिवसांच्या विशेष मोहिमेद्वारे राज्यातील सर्व ग्रामीण अंगणवाडीकेंद्रांना गुणवत्तापुर्ण पेयजल उपलब्ध करुन देण्याची बाब शासनाच्या विचाराधीन आहे.

शासन निर्णय-

जल जीवन मिशन अंतर्गत संदर्भिय क्र.१ च्या शासन निर्णयाद्वारे राज्यातील ग्रामीण भागातील कुटुंबासाठी नळाद्वारे गुणवत्तापुर्ण पेयजल पुरवठा करण्याचे निश्चित केले आहे. याच धर्तीवर ग्रामीण भागातील प्रत्येक अंगणवाडी केंद्रांना नळाद्वारे गुणवत्तापुर्ण पेयजल उपलब्ध करुन देण्याकरीता खालीलप्रमाणे कार्यपध्दती विषद करण्यात येत आहे.

१. ज्या अंगणवाडी केंद्रांना नळाद्वारे पाणी पुरवठा उपलब्ध नाही अशा अंगणवाडी केंद्रांना संबंधित अंगणवाडी पर्यवेक्षिका व कनिष्ठ अभियंता, समग्र शिक्षा यांनी व्यक्तिश: भेट देऊन पाणी पुरवठा उपलब्ध करण्याविषयी सविस्तर लेखी मागणीपत्र व अंदाजपत्रक तयार करावे.

२. सोबतच्या तक्त्यात नमुद केल्यानुसार तांत्रिक मान्यतेनंतर संबंधित अंगणवाडी पर्यवेक्षिका व कनिष्ठ अभियंता, समग्र शिक्षा यांनी खालील सूचनांप्रमाणे संबंधित ग्रामपंचायती/ मुख्य कार्यकारी अधिकारी, जिल्हा परिषद यांना प्रशासकीय मान्यतेस प्रस्ताव सादर करावा.

३. बोअरवेल बाबतचे प्रस्ताव संबंधित जिल्ह्यातील भूजल सर्वेक्षण आणि विकास यांचेकडे सादर करावेत. त्यांनी उद्भवाचे प्रमाणपत्र त्वरित द्यावे. तांत्रिक मान्यता सोबतच्या तक्त्यात नमुद केल्यानुसार देण्यात यावी.

४. उपरोक्त प्रशासकीय मान्यता प्राप्त करण्यापर्यंतची कार्यवाही हा शासन निर्णय निर्गमित झाल्यापासून ३० दिवसांच्या आत पुर्ण करण्यात यावी.

०२. सदर शंभर दिवसांच्या अभियानातील लक्ष्य साध्य करण्याकरीता स्थानिक परिस्थिती विचारात घेऊन पुढील प्रमाणे कालबध्द कार्यवाही करण्यात यावी.

अ. क्र	स्थानिक परिस्थिती	कार्यवाही	योजना मंजुरी कार्यपध्दती	कालावधी
१.	अंगणवाडी परिसरामध्ये हातपंप/ बोअरवेल उपलब्ध आहे/ तसेच पुरेशा बारमाही पाणी उपलब्धता आहे.	**अ.** अंगणवाडयांना शाश्वत पाणी पुरवठ्यासाठी पुरेशा नळ जोडण्या देण्यात याव्यात. भूजल पातळीनुसार वीजेवर/ सौर उर्जेवर आधारित सबमर्सिबल पंप्स स्थापित करण्यात यावेत.	१. भूजल सर्वेक्षण आणि विकास यंत्रणा, जिल्हा परिषद यांनी तांत्रिक मान्यता द्यावी. आवश्यक उद्भव चाचणी (yield test) जिल्हा परिषदेने करावी. २. रु.५०,०००/- पर्यंतच्या कामांना संबंधित ग्रामपंचायतींनी प्रशासकीय मान्यता द्यावी. त्यापुढील कामांचे प्रस्ताव प्रशासकीय मान्यतेस्तव	- १५ दिवस - ३ दिवस

		ब. विरळ वाडया-वस्त्या, डोंगराळ/ वन/ आदिवासी भागातील वस्त्यांमध्ये सौर उर्जेवर आधारित स्वतंत्र पाणी पुरवठा व्यवस्था स्थापित करावी.	मुख्य कार्यकारी अधिकारी, जिल्हा परिषद यांचेकडे पाठवावे. ३. ग्रामपंचायतींनी याकरीता लागणारा निधी १५ वित्त आयोग /जल जीवन मिशनच्या निधीमधून वापरण्याबाबत निर्णय घ्यावा. ४. कार्यकारी अभियंता (ग्रा.पा.पु.) जिल्हा परिषद यांनी संपुर्ण योजनेची अंमलबजावणी करुन योजना कार्यान्वित करावी.	- ७ दिवस - ४५ दिवस
२.	अंगणवाडी परिसरामध्ये हातपंप बोअरवेल उपलब्ध आहे; तथापि हंगामी स्वरुपात किंवा कमी प्रमाणात पाणी उपलब्ध आहे.	असे प्रस्ताव संबंधित वरिष्ठ भूवैज्ञानिक, भूजल सर्वेक्षण आणि विकास यंत्रणा यांच्याकडे बोअरवेलच्या यथायोग्य स्थळनिश्चितीकरीता किंवा अन्य उपाययोजनेकरीता संदर्भित करण्यात यावेत.	कार्यकारी अभियंता, ग्रामीण पाणी पुरवठा विभाग, जिल्हा परिषदेमार्फत उपाययोजना प्रस्तावित करुन जल जीवन मिशनप्रमाणे तांत्रिक मान्यता व मुख्य कार्यकारी अभियंता यांनी प्रशासकीय मान्यता देऊन मार्गदर्शक सूचनांनुसार पाणी पुरवठा उपलब्ध करुन देण्यात यावा.	---- -
३.	सदर गावामध्ये पाणी पुरवठा योजना आहे; तथापि, भौगोलिक अंतर/ परिस्थिती, निधी उपलब्धता इ. कारणामुळे अंगणवाडीमध्ये पाणी पुरवठा उपलब्ध नाही.	ग्रामपंचायतीद्वारे अस्तित्वातील पाणी पुरवठा योजनेतून नळ पाणी पुरवठा तसेच पुरेसे नळ कनेक्शनस उपलब्ध करण्यात यावेत.	१. उप अभियंता, समग्र शिक्षा यांनी तांत्रिक मान्यता द्यावी. याकरिता सोबतच्या "परिशिष्ट- अ" ते ई मधील दरपत्रिका व सूचनांच्या अनुषंगाने कार्यवाही करावी. २. रु.१०,०००/- पर्यंतच्या कामांना संबंधित ग्रामपंचायतींनी प्रशासकीय मान्यता द्यावी. त्यापुढील कामांचे प्रस्ताव प्रशासकीय मान्यतेस्तव मुख्य कार्यकारी अधिकारी, जिल्हा परिषद यांचेकडे पाठवावे.	- ५ दिवस - ३ दिवस

			३. ग्रामपंचायतींनी याकरीता लागणारा निधी १५ वित्त आयोग /जल जीवन मिशनच्या निधीमधून वापरण्याबाबत निर्णय घ्यावा. ४. उप अभियंता, समग्र शिक्षा यांनी संपुर्ण योजनेची अंमलबजावणी करुन योजना कार्यान्वित करावी.	- ७ दिवस - ४५ दिवस
४.	अंगणवाडीला नळाद्वारे पाणी उपलब्ध आहे तथापि शाश्वत पाणी पुरवठ्यासाठी त्यामध्ये सुधारणा करणे गरजेचे आहे.	या कामांसाठी रेट्रोफिटींग (सुधारणात्मक पुनर्जोडणी) करुन पाणी पुरवठा उपल्ब्ध करण्यात यावा.	१. उप अभियंता, समग्र शिक्षा यांनी तांत्रिक मान्यता द्यावी २. रु.२०,०००/- पर्यंतच्या कामांना संबंधित ग्रामपंचायतींनी प्रशासकीय मान्यता द्यावी. त्यापुढील कामांचे प्रस्ताव प्रशासकीय मान्यतेस्तव मुख्य कार्यकारी अधिकारी, जिल्हा परिषद यांचेकडे पाठवावे. ३. ग्रामपंचायतींनी याकरीता लागणारा निधी १५ वित्त आयोग /जल जीवन मिशनच्या निधीमधून वापरण्याबाबत निर्णय घ्यावा. ४. उप अभियंता, समग्र शिक्षा यांनी संपुर्ण योजनेची अंमलबजावणी करुन योजना कार्यान्वित करावी.	- ५ दिवस - ३ दिवस - ७ दिवस - ४५ दिवस

०३. याकरीता होणारा खर्च निधी उपलब्धता विचारात घेऊन ग्रामपंचायतीच्या ठरावानुसार १५ वा वित्त आयोग व जल जीवन मिशनकरीता उपलब्ध तरतूदीतून भागविण्यात यावा. जल जीवन मिशनचा निधी सार्वजनिक वित्तीय व्यवस्थापन प्रणालीद्वारे (PFMS) उपलब्ध करुन देण्यात येईल.

०३. या योजनांचे भौतिक व आर्थिक संनियंत्रण, मालमत्तेचे संनियंत्रण जल जीवन मिशन आयएमआयएस(IMIS) प्रणालीद्वारे करण्यात येईल. अशाप्रकारे संनियंत्रणाची व नियमित लेखापरिक्षणाची जबाबदारी संबंधित जिल्हा पाणी व स्वच्छता मिशनची राहील.

०४. सदर तदतुदी या शासन निर्णयाच्या दिनांकापासून अंमलात येतील.

०५. हा शासन निर्णय महिला बाल विकास विभागाचे अनौपचारिक संदर्भ क्र. ८६८/ दि.१३.११.२०२० व शालेय शिक्षण विभागाचे अनौ.संदर्भ.क्र११/ एसडी ४,दि१८.११.२०२०अन्वये प्राप्त सहमतीस अनुसरुन निर्गमित करण्यात येत आहे.

०६. सदर शासन निर्णय महाराष्ट्र शासनाच्या www.maharashtra.gov.in या संकेतस्थळावर उपलब्ध करण्यात आला असून त्याचा संकेताक २०२०११२३१२५५४०४५२८ असा आहे. हा आदेश डिजीटल स्वाक्षरीने साक्षांकित करुन काढण्यात येत आहे.

महाराष्ट्राचे राज्यपाल यांच्या आदेशानुसार व नावाने.

Sanjay Chahande

Digitally signed by Sanjay Chahande
DN: c=IN, o=Government of maharashtra, ou=Water Supply & Sanitation dept, postalCode=400032, st=Maharashtra, 2.5.4.20=1bed10a58141847cce2660609247682836584568e524ed107d81092655e08eee, serialNumber=17df548835856979dd20b49bd19b3f922c11a9955546b7989a245e6b2a9175e1, cn=Sanjay Chahande
Date: 2020.11.27 17:08:19 +05'30'

(डॉ.संजय चहांदे)
अपर मुख्य सचिव,महाराष्ट्र शासन

प्रत,

१. मा. मुख्यमंत्री, महाराष्ट्र राज्य यांचे प्रधान सचिव, मंत्रालय, मुंबई-३२.
२. मा.मंत्री (पाणी पुरवठा व स्वच्छता) यांचे खाजगी सचिव मंत्रालय, मुंबई-३२
३. मा. राज्यमंत्री (पाणी पुरवठा व स्वच्छता) यांचे खाजगी सचिव, मंत्रालय, मुंबई
४. मा. मंत्री (सर्व) यांचे खाजगी सचिव, मंत्रालय, मुंबई
५. मा.विरोधी पक्षनेता,महाराष्ट्र विधानसभा, विधानमंडळ सचिवालय, मुंबई
६. मा.विरोधी पक्षनेता, महाराष्ट्र विधान परिषद, विधानमंडळ सचिवालय, मुंबई
७. मा.मुख्य सचिव, महाराष्ट्र राज्य यांचे उपसचिव, मंत्रालय, मुंबई
८. अपर मुख्य सचिव/ प्रधान सचिव (पाणी पुरवठा व स्वच्छता विभाग, शालेय शिक्षण विभाग/ महिला व बाल विकास विभाग) यांचे स्वीय सहाय्यक मंत्रालय, मुंबई
९. संचालक/ मिशन संचालक, जल जीवन मिशन/ सर्व शिक्षा अभियान/ राजमाता जिजाऊ पोषण अभियान
१०. सदस्य सचिव, महाराष्ट्र जीवन प्राधिकरण, मुंबई
११. संचालक, भूजल सर्वेक्षण आणि विकास यंत्रणा, पुणे

१२.मुख्य कार्यकारी अधिकारी, जिल्हा परिषद (सर्व)
१३.सह सचिव/विशेष कार्य अधिकारी/उप सचिव, पाणी पुरवठा व स्वच्छता विभाग, मंत्रालय, मुंबई
१४.उप सचिव,शालेय शिक्षण विभाग/ महिला व बाल विकास विभाग, मंत्रालय, मुंबई
१५.अवर सचिव/ कक्ष अधिकारी (सर्व) पाणी पुरवठा व स्वच्छता विभाग, मंत्रालय, मुंबई.
१६.प्रकल्प संचालक, राज्य पाणी व स्वच्छता मिशन, बेलापूर, नवी मुंबई
१७.उप मुख्य कार्यकारी अधिकारी, जिल्हा परिषद (सर्व)
१८. निवडनस्ती (कार्यासन -पापु ०७)

'परिशिष्ट-अ'

शाळा/अंगणवाडी यांना नळ जोडणी देण्यासाठी अंदाजपत्रक तयार करताना घ्यावयाचे दरपत्रक व सूचना

१. ग्रामीण पाणी पुरवठा योजनांमध्ये नळ जोडणी संदर्भातील दर निश्चित करण्यात आले असून ते सोबत जोडलेल्या तक्त्यात नमुद आहेत. सदर दर GST विरहीत आहे. त्यामुळे अंदाजपत्रकात शेवटी १२% GST ची तरतूद करावी.

२. या निविदा GST दरविरहीत काढण्यात याव्यात व कंत्राटदाराच्या GST ची प्रतिपूर्ती त्यांनी भरलेल्या GST च्या आधारे करण्यात यावी.

३. या तक्त्यात नमुद केलेल्या बाबींचे तपशील (Description) व सविस्तर विवरण (Work Specification) अंदाजपत्रक व निविदा तयार करतांना जोडण्यात यावेत.

४. नळ जोडणी दर पृथ्थकरणात नळ जोडणीचे दर (With road Crossing) करीता वितरण वाहिनीपासून ग्राहकाच्या घरापर्यंत सरासरी १२ मी. लांबीचा पाईप घेतलेला आहे.

५. नळ जोडणी दर पृथ्थकरणात नळ जोडणीचे दर (Without road Crossing) करीता वितरण वाहिनीपासून ग्राहकाच्या घरापर्यंत ८ मी. लांबीचा पाईप घेतलेला आहे.

६. क्षेत्रिय परिस्थितीनुसार प्रत्यक्षात यापेक्षा जास्त लांबीच्या पाईपलाईनची आवश्यकता भासल्यास दरसूचितील अनुषंगीक बाबींच्या समावेशासह (उदा.खोदकाम, पाईप, दर इ.) अंदाजपत्रकात वेगळी बाब अंतर्गत समावेश करण्यात यावा.

७. जर ग्राहकाचे स्थान (उदा.अंगणवाडी, शाळा, प्राथमिक आरोग्य केंद्र इ. सार्वजनिक ठिकाण) वितरण वाहिनीपासून दूर असल्यास ग्राहकाला निकषानुसार ७ मी. दाबाने पाणी पुरवठा करण्यासाठी न्युनतम व्यासाची वितरण वाहिनी ग्राहकाच्या शक्य तेवढ्या जवळ टाकण्याच्या दृष्टीने पाईपलाईनच्या अतिरिक्त लांबीसाठी अंदाजपत्रकात वेगळीबाब अंतर्भूत करण्यात यावी. याबाबत "परिशिष्ट-ड" मध्ये नमुना अंदाजपत्रक दिलेले आहे. याप्रमाणे अंदाजपत्रक तयार करता येऊ शकतील.

८. घरगुती नळजोडणी १५ मि.मि. व्यासाची करण्यात यावी. यापेक्षा अधिक व्यासाची नळ जोडणी द्यावयाची असल्यास त्यासाठी संबंधित मुख्य कार्यकारी अधिकारी, जिल्हा परिषद यांची परवानगी आवश्यक राहील.

९. शाळा व अंगणवाडीस घ्यावयाचे नळ जोडणीचे व्यास शासन निर्णयात योजना मंजुरी कार्यपध्दतीत नमुद करण्यात आलेल्या तांत्रिक मान्यता देण्यास सक्षम क्षेत्रिय स्तरावरील अधिका-याने निश्चित करावेत.

१०.अतिरिक्त बाबींसाठी महाराष्ट्र जीवन प्राधिकरणाच्या प्रचलित दरसूचीनुसार दर घेण्यात यावेत.

"परिशिष्ट–ब"

Jal Jeevan Mission : Rate for Household Connection without water meter With and Without Road Crossing				
Sr.No.	**Description**	**Unit**	**Qty**	**Rate**
			PVC/HDPE etc Distribution main	
	"Providing and making UPVC/MDPE pipe consumer service connection on Distribution main by drilling hole with suitable means , including all labour , UPVC/MDPE Pipe of required length with or without Road xing as described below, including cost of specials like Saddle/Clamp Saddle of suitable material, and diameter suitable for Distribution main, 15mm/20mm/25mm respective Dia Heavy duty Brass/Polyprophylyne(Twin Jacketed) Ferrule /FCV, Male and Female thread adapter Elbow, Bends,couplers ,Tees, Clamps of suitable material and sundry materials as per requirement, including providing and fixing medium duty 15.mm brass bib tap, GI casing pipe of suitable minimum 32mm/40mm/50mm respective dia of required length for Road crossing, including required labour for excavation in all types of strata up to the depth of 0.75m or as per site requirement, all types of plumbing fittings, refilling , Closing the water supply in that area, dewatering, hydraulic testing and restarting the water supply ,transportation of material etc. complete as directed by Engineer in charge. " ***Rates are excluding GST***			
	A)For MDPE/UPVC Pipe Service Connection on Distribution main (With Road Crossing)			
	for 15 mm Service connection	**No**	**one**	**2382.00**
	For MDPE/UPVC Pipe Service Connection on Distribution main (Without Road Crossing)			
	for 15 mm Service connection	**No**	**one**	**1537.00**

Note- Rates are excluding GST

Jal Jeevan Mission : Rate for Household Connection without water meter With and Without Road Crossing				
Sr.No.	**Description**	**Unit**	**Qty**	**Rate**
			Connection on GI Distribution main only	
	"Providing and making GI pipe consumer service connection on GI Distribution main by drilling hole with suitable means , including all labour ,GI Pipe of required length with or without Road xing as described below, including cost of specials like Saddle/Clamp Saddle of suitable material, and diameter suitable for Distribution main, 15mm/20mm/25mm respective Dia. Heavy duty Brass/Polyprophylyne(Twin Jacketed) Ferrule /FCV,, Male and Female thread adapter Elbow, Bends,couplers ,Tees, Clamps of suitable material and sundry materials as per requirment, including providing and fixing medium duty 15.mm brass bib tap, GI casing pipe of minimum 32mm/40mm/50mm respective dia of required length for Road crossing, including required labour for excavation in all types of strata up to the depth of 0.75m or as per site requirement, all types of plumbing fitting, refilling , Closing the water supply in that area, dewatering, hydraulic testing and restarting the water supply ,transportation of material etc. complete as directed by Engineer in charge. ***Rates are excluding GST***			
	A)For GI Pipe Service Connection on Disribution main **(With Road Crossing)**			
	for 15 mm Service connection	**No**	**one**	**3018.00**
	(Without Road Crossing)			
	for 15 mm Service connection	**No**	**one**	**1961.00**
	Note: Household Tap Connection of GI pipe shall be used where distribution network is to be laid only in rocky strata or where there is exposed rock. when metalic pipes are used for distribution network.			

Note- Rates are excluding GST

"परिशिष्ट–क"

Works Specification in Detail

WS-H-21.CONSUMER SERVICE CONNECTION

WS-H-21.1 General

Providing and making UPVC / MDPE /GI pipe consumer service connection on PVC/HDPE/DI/GI pipe distribution main including all labour and material charges etc complete.

The item includes providing necessary material for service connection such as UPVC/MDPE/GI pipe) of length

1) with Road crossing - 12m or

2) without Road crossing -8 m.

MDPE/HDPE/PVC/GI specials like Saddle/Clamp Saddle of suitable material, double compression elbow, female threaded adopter with metal insert , UPVC compression end ball valve, heavy-duty Brass/Polypropylene(Twin Jacketed) Ferrule(flow control valve) of appropriate size, G.I. casing pipe of 32 mm for road crossing, including required labour for excavation in all types of strata up to the depth of 0.75m or as per site requirement, all types of plumbing fitting, refilling , Closing the water supply in that area, dewatering, hydraulic testing and restarting the water supply ,transportation of material etc. complete as directed by Engineer In Charge, in charge. This item shall be executed as per attached details below

WS-H-21.2 :- MATERIALS

Pipes and Specials

Pipes and specials may be of any of the following types as specified:

a) Galvanised steel – IS 1239 & IS 4736
b) UPVC pipes – IS 4985
c) MDPE pipes –ISO 4984 & ISO 4427-1996.

n choosing the material for piping and fittings, account shall be taken of the character of the water to be conveyed through it, the nature of the ground in which the pipes are to be laid and the relative economics.

WS-H-21.2.1 :- Common for UPVC/MDPE/ GI (Only for GI pipe distribution) House Services Connection

The standard size of brass or gun metal fittings shall be designated by the nominal bore of the pipe outlet to which the fittings are attached. A sample of each kind of fittings shall be got approved from the Engineer In Charge and all supplies made according to the approved samples.

All UPVC/MDPE/GI/Brass/wrought/cast iron fittings shall be sound and free from laps, blow holes and pitting. Both internal and external surfaces shall be clean, smooth and free from sand etc. The area of the water way of the fittings shall not be less than area of the nominal bore, chromium plating wherever specified shall be of 0.3 micron. The chromium shall never be deposited on brass unless a heavy coating of nickel is interposed. In the case of iron a thick coat of copper shall first be applied, then one of nickel and finally the chromium. In finish and appearance the plated articles when inspected shall be free from plating defects such as blisters, pits roughness and unplanted areas and shall not be stained or discolored. Before fitting is plated, the washer plate shall be removed from the fittings, the gland packing shall be protected from the plating solution

WS-H-21.2.1.1 :- Electrofusion tapping Saddles or Clamp Saddles

Providing, Fixing Testing and commissioning HDPE/PVC/UPVC Pipe service Saddles, **electrofusion tapping saddle or** Clamp Saddles of suitablesizeofdist.mainx15mm for HDPE / PVC / CI / DI / GI Pipe line specially designed for a low exit from PE and PVC pipes with a working pressure of upto 10 bar. The saddles are perfectly watertight, extremely simple to use, easy and fast to reuse, frost proof, suitable for use in direct sunlight and highly impact resistant.

Pipe saddles specifications:

SPECIFICATIONS OF CLAMP SADDLE

• Body- Main body should be made up of Polypropylene molded with Stainless steel SS304 female threaded insert.

• Rubber seal: Shall be made up of NBR for leak proof joint & firm grip, saddle seal should have contoured gasket to provide a positive initial seal. Use of a simple O ring should be prohibited at all times.

• Bolts and Nuts: MS or SS 304 nut bolts

• Standards: Should comply with AS/NZS 4129:2008 for endurance,

• Certifications: BS 6920, WRAS certification for suitability of non-metallic products for use in contact with water intended for human consumption with regards to their effect on the quality of the water.

• Outlets from 1/2" and above, reinforcing stainless steel rings.

SPECIFICATIONS OF COMPOSITE SADDLE

• Body-Should be Made up of Non Corrosive Engineering plastic (HDPE) molded with Stainless steel SS304 female threaded insert also reinforcement metal strip is embedded in plastic body. Body having retaining cavity housing for internal & external retention of elastomeric seal..

• D Washer- Should be made up of Industrial Plastic.

• Strap- Should be made up of SS 304 grade to prevent corrosion over the long service life.

• Bolts and Nuts: MS or ss 304 nut bolts

• Rubber Bush - Should be Made up of NBR - for leak proof joint & firm grip, saddle seal is contoured gasket to provide a positive initial seal.

SPECIFICATIONS OF ELECTROFUSION SADDLE

• Saddle is manufactured with Blue PE80/PE100 - material which and is compatible with the distribution mains.

• Comply with the requirements of BS EN 12201-3: 2003, BS EN 1555-3 or ISO 8085-3.

• SDR 11 rating.

- All the products shall be manufactured by injection molding using PE 80/PE 100 polymer and is compatible for fusing on PE 80 distribution mains manufactured according to the relevant national or international standards.
- The electro fusion saddle with only a single heating coil to fully electro fuse the fitting to the adjoining pipe or pipe component as applicable. The heating coils shall be terminated at terminal pins and protected with polyethylene shroud. Each terminal shroud is additionally protected with polyethylene shroud caps.
- The fittings should be V-regulated type designed to fuse at a fusion voltage of 40 volts AC.
- D Washer- Should be made up of Industrial Plastic.
- The heating elements should be designed for fusion at any ambient temperatures between -5 to +40 degree centigrade at a constant fusion time i.e. without any compensation of fusion time for different ambient temperatures.
- The threaded outlet is ½” BSP to suit the required House Service Connections.
- The outlet is reinforced with female threaded metal inserts of SS 304.
- The product group used for drinking water applications should have undergone type test by WRc- NSF, U.K. according to BS 6920 and a certificate from either WRc-NSF or WRAS.

SPECIFICATIONS OF DI SADDLE

- Body: Should be made up of Ductile Iron (With standard BSP Female threads).
- D Washer: Should be made up of industrial plastic.
- Strap: Should be made up of SS 304 with rubber sleeve as per require pipe diameter.
- Fastener: Should be made up of SS 304.
- Rubber Bush : Should be Made up of NBR - for leak proof joint & firm grip, saddle seal is contoured gasket to provide a positive initial seal for leak proof joint & firm grip.
- Saddle is manufactured with Blue PE80 - material which and is compatible with the distribution mains.

SPECIFICATIONS OF COMPRESSION FITTINGS

- Compression fitting body –Should be made up of Black colour Poly Propylene Co-Polymer
- Compression nut –Should be made up of Blue colour Poly Propylene Co- Polymer.
- Insert -Should be made up of SS 304/Brass
- Catcher- Should be made of Delrin to provide a proper grip to pipe.
- Support ring - Should be made of Polypropylene to exert the pressure on O ring to ensure leak proof joint
- O ring - Should be made of NBR to prevent leakage.
- PN 16 rated compression fittings conforming to ISO 17885 – 2015
- The product group used for drinking water applications should have undergone type test by WRc- NSF, U.K. according to BS 6920 and a certificate from either WRc-NSF or WRAS.

WS-H-21.2.1.2 :- Ferrules

The ferrules for connection with C.I. main shall generally conform to IS 2692. It shall be of non ferrous materials and shall be of nominal bore as specified. The ferrule shall be fitted with a screw and plug or valve capable of completely shutting off the water supply to the communication pipe, if and when required.

Brass ferrul Regulator

Providing, fixing, testing and commissioning ISI Mark (conforming to IS 2692) Brass Ferruls Regulators of following dia for house connections of Distribution system to be directly fitted on PP clamp Saddle or PE Electrofusion Branch Tapping Saddles, respective for maintaining uniform pressure for water distribution networks on undulating terrain and Regulating Water supply for House Service Connection (HSC).

Specifications for Brass ferrul :

- Brass ferrul must be forged.
- Built in regulator for regulation of flows of water
- Pressure Rating - As per IS 2692. Ferrule withstands a pressure up to 16bar i.e. PN 16
- Easy to joint saves time on site
- No leakage
- Long Life
- Available in standard sizes
- with marking of brand name

Brass ferrul Regulator should fulfill following Standards:

- Material complies with IS319 Grade 1 /2.
- Compatibility DI Saddle, composite saddle, PP clamp saddle,PE Electro fusion Branch Tapping Saddles
- Connection Threading - IS: 554 BSPT, ISO:7 -1

Twin Jacketed Polypropylene Ferrule :-

Providing Fixing Testing and commission Twin Jacketed Polypropylene Ferrule with SS 304 insert with Unique design having combination of conventional ferrule with built in Female Threaded Adopter (FTA)-compression fitting at outlet helps to eliminate one joint of separate FTA. PP Ferrule should fulfill following Standards.

- Twin Jacketed body to withstand high line pressures.
- Unique sealing arrangement to avoid unauthorized fiddling of pressure/flow settings.
- The inner flow control screw is non removable from the body to prevent water thefts
- Tested by CIPET, Aurangabad, a government organization

PP Ferruls should should comply following Technical specifications

- Insert-Should be of SS304 at the inlet of ferrule for mounting on saddle.
- Ferrule body-Body must be twin jacketed with inner Jacket made up of Delrin & outer body made up of UV resistant virgin polypropylene.

- Pressure rating: 16 kg/cm2
- Flow regulating screw- Should be of Delrin and should not be removable from the ferrule body.
- Compression nut & Top Cap-Should be made up of Blue colour Poly Propylene.
- Ring & Grommet – O-ring Should be of NBR & Grommet should be of Silicon to prevent leakage.
- Catcher- Should be made up of Delrin to provide a proper grip to pipe.
- Support ring -Should be made up of Polypropylene to provide the pressure on O ring to ensure leak proof joint.
- Ferrule Key – Should be made up of Delrin to regulate/adjust the flow control from top side.
- Standards: PN 16 rated compression fittings conforming to ISO 17885 – 2015.
- Certifications: BS 6920, WRAS certification for suitability of non-metallic products for use in contact with water intended for human consumption with regards to their effect on the quality of the water.

FIXING FERRULES :-

For fixing ferrule the empty main shall be drilled and tapped at 45 degree to the vertical and the ferrule screwed in. The ferrule must be so fitted that no portion of the shank shall be left projecting within the main into which it is fitted.

WS-H-21.2.1.3 Technical Specifications of Household Flow control valve (FCV)

1	The FCV should be made fromfood grade stainless steel SS316
2	The manufacturersofFCV should have theirown manufacturingunit
3	Itshould have flowdirection arrowembossed on itsoutside surface
4	The Valve should act as flow control valve and non return valve
5	Minimum operating pressure shall be 0.1kgf (10 cm head)
6	Designed pressure levels shall be 1 metre to 50 metres
7	Ball should also made up of stainless steel
8	The Accuracy of valves shall be +-20 % of average flow rate
9	Orifice size shall notbe less than 12mm
10	Ball size shall also benotless than 12 mm
11	FCV shall not be weighing less than125 gm sand its length shall not be less than 70 mm
12	The FCV shall be made with CNC machine made only using solid steel Bars of SS 316 grade.No casting methods should be used.
13	SS Inlet body part of the valve,SS Outlet part with notch openings and SS ball inside.All parts are made by SS 316 grade.
14	The FCV nominal design is for 5 Lpm discharges at 0.5 bar pressure loss And should not exceed the flow at the range of 7.0 Lpm at 1 bar pressure or more.

15	The FCV is with internal arrangements of very simple passage inline such That the valve will pass the small floating particles if any entered in the valve to avoid choking.
16	The ball inside the valve shall act as non return valve to prevent contamination through back flow of house connection.
17	The FCV should be properly fitted on Saddle, which is fixed on distribution pipeline having no gaps / voids in between Saddle and pipeline
18	The FCV shall be got tested from FCR Iby the manufacturer as per above standards. The quantum of checking to be done from FCR list attached herewith.
19	All the FCVs shall be got checked through Third party inspecting Agency registered with MJP. The FCV shall be checked for outside verification, visual inspection, marking verification, dimensional check material lab test review, minimum length check, minimum weight check, flow rate check and other checks as specified above
20	The FCV shall be measured on number basis. It shall be paid @ 80% on supply and balance 20% on Installation and commissioning of house service connection

DETERMINING THE FLOW RATE OF FCV IN DISTRIBUTION SYSTEMS

1	Rate of supply in LPCD	40	55	70	100	120	135	150
2	No. of persons in a family	5	5	5	5	5	5	5
3	Total demand in litres	200	275	350	500	600	675	750
4	Design hours of supply in distribution networks	8	8	8	8	8	8	8
5	Average hourly demand in litres per hour	25	34.38	43.75	62.5	75	84.38	93.75
	in LPM	0.417	0.573	0.729	1.042	1.25	1.406	1.563
6	peak factor (assu ming no withdrawal for storages)	4	4	4	4	4	4	4
	Supply hours	2	2	2	2	2	2	2
	Peak hourly demand in LPH	00	137.5	175	250	300	337.5	375

	Peak demand in Litres per minute	0	0	0	0	1.667	2.292	2.917
	Say	0	3	0	5	2	2	3
	Proposed flow rate for FCV	5	5	5	5	10	10	10

Guidelines for installation of Flow Control Valve (FCV)on Distribution pipeline for giving service water connection to consumer

- The pipeline network needs to be checked before fixing of house service connection.
- The HDPE/DI/PVC distribution pipe line that is to be tapped should be exposed from the trench. The surface where the tapping to be done should be cleaned thoroughly.
- Make suitable size hole drilled on the pipeline. Drilling on pipeline shall be made with the help of drilling tool with cutter provided by the saddle manufactures.
- Electro fusion tapping saddle need to be fitted with the tapped pipeline by welding with1/2 inch stainless steel female metal threaded outlet insert.
- Over tightening of the saddle around the pipe shall be avoided unless clamp is fitted to the pipe. Any scouring or damage to the pipe shall not occur.
- For connection with PVC/polypropylene mechanical saddle on HDPE/PVC pipeline, same above procedure can be adopted. Use mechanical clamp saddle for connection on D.I. Pipe.
- Clean the Flow Control Valve with cloth to make sure it is free from dirt especially at the threading.
- Apply sufficient amount of Teflon tape on the threading to ensure a leak proof joint.
- Shake the Flow Control Valve to hear the chatter noise of the ball. This will ensure that the ball is assembled in the Flow Control Valve and ball is not jammed inside the body.
- Note the arrow marking on the body of FCV indicating direction of flow of water.
- Ensure that the Flow Control Valve is installed with the arrow pointing upwards only, otherwise there will not be any flow of water as it is Non-Return VALVE (NRV) in opposite direction.
- Fix the Flow Control Valve over the saddle by proper tightening.
- The Flow Control Valve is fitted with stainless steel female metal threaded outlet Avoid over tightening of the Flow Control Valve as this may lead to damage of threading.
- Fix the female threading adapter with compression fitting of MPPE 915 mm) over the Flow Control Valve.
- Proceed with the required bends, elbow as per the requirement.
- Fix the union and stop cock in order to open and control the water flow during maintenance if required.
- Female threaded elbow off take compression adopts with SS insert can also be used for fixing of MDPC pipe with compression joints, the pipe should inserted upto the extent beyond the “O” ring.
- THE MDPE pipe ends must be cut square and clean before using with the fittings. No need to open fitting and take apart components separately. Loosen the quick joint nut by 2 to 3 turns.

- Insert the pipe into the fitting upto the stopper make sure pipe goes will pass the O ring and rest upto the stopper.
- Tighten the quick joint nut firmly.
- A figure for house service connection is attached separately.
- Note that the FCV should be properly fitted on Saddle which is fixed on Distribution pipeline having no gaps/voids in between saddle and FCV.

WS-H-21.2.1.4 :- Bib Taps and Stop Valve

Brass : A bib tap is a draw off tap with a horizontal inlet and free outlet and a stop valve is a valve with suitable means of connections for insertion in a pipe line

for controlling or stopping the flow. They shall be of specified size and shall be of screw down type and shall conform to IS 781. The closing device shall work by means of disc carrying a renewable non-metallic washer which shuts against water pressure on a seating at right angles to the axis of the threaded spindle which operates it. The handle shall be either crutch or butterfly type securely fixed to the spindle. Valve shall be of the loose leather seated pattern. The cocks (taps) shall open in anti-clock wise direction.

The bib tap and stop valve shall be polished bright. The minimum finished weights of bib tap and stop valve shall be as specified in Table

Minimum Finished Mass of Bib Taps and Stop Valves

Size	Minimum Finished Mass			
	Bib Taps	Internally Threaded	Externally Threaded	Mixed End
mm	kg	kg	kg	kg
8	0.25	0.22	0.25	0.235
10	0.3	0.3	0.35	0.325
15	0.4	0.33	0.4	0.365
20	0.75	0.675	0.75	0.71
25	1.25	1.18	1.3	1.25
32	--	1.68	1.8	1.75
40	--	2.09	2.25	2.17
50	--	3.7	3.85	3.75

In case these are required to be nickel plated, the plating shall be of the first quality with a good thick deposit of silvery whiteness capable of taking high polish which will not easily tarnish or scale.

WS-H-21.2.2 :- for UPVC/MDPE pipe and Specials House Service Connection

The house connection using Medium Density Polyethylene(MDPE)/UPVC pipes shall consist of the following options ;

WS-H-21.2.2.1 :- Option 1:

Electro Fusion Tapping saddle of PN 12.5 PE 100 compatible to the HDPE Mains of various diameters. The outlets should be reinforced with female threaded metal inserts of SS 304, metal inserted male thread elbow, MDPE PE 80 Blue pipes, 90 deg double compression elbows, Gunmetal/Brass ball valves of required sizes and water meter. The outlet size shall be either 15mm, 20 mm depending upon the type of Service Connection.

Electro fusion Tapping saddle shall be provided with a SS-304 threading with separate cutter having cutting edges for making hole / tapping on the Mains as shown in drawing and Fusion joint in such a manner that the 20-63mm dia outlet depending on requirement of the house service connections rotate able 3600 to the axis of pipeline including maintaining the same for the period under O&M.

WS-H-21.2.2.2 :- Option 2:

Providing required sizes of HSC brass ferrule with union confirming to relevant IS make hole by drilling on top of DI distribution mains, fixing the ferrule for diameter 200 to 400mm and making the connection water tight etc.,

as shown in the drawing and as directed by the Engineer In Charge, including cost of required specials, drilling charges, hydraulic testing, maintaining the same for the period under O&M.

From tapping on DI mains, metal inserted male thread elbow, MDPE PE 80 Blue pipes, 90 deg double compression elbows, Gunmetal/Brass ball valves of required sizes and water meter

WS-H-21.2.2.3 :- Items common for both options:

From the outlet of Male Threaded compression Elbow, 15/ 20 mm MDPE Service Pipe shall be extended up to property boundary. At the end of the Service pipeline, 90 Deg Double Compression Elbow shall be fixed and MDPE Service pipe shall be connected. From the Service Pipe, a, ferrul or fcv of 15 mm size with Compression joint at one side and Female joint at one side.

The connecting pipe shall be made out of MDPE conforming to ISO 4984 & ISO 4427-1996. This International standard specified the required properties of pipes made from polyethylene (PE) to be used for buried water mains and services and for water supply above ground both inside and outside buildings. In addition, it specifies some general properties of the material from which these pipes are made, including a classification scheme. Other relevant IS and International Standards applicable for the MDPE pipe shall be followed as approved by the Engineer in Charge,

WS-H-21.2.2.4:- Technical Specifications for Electro Fusion tapping:

All the electro fusion fittings included in this document will be designed for use in water distribution system and be manufactured/supplied by manufacturers having latest ISO certification for their quality systems. The products should comply with the following specific requirements.

1) All the electro fusion fittings should have BS EN 12201-3: 2003, BS EN 1555-3 or ISO 8085-3. Melt Flow Rate (MFR) in the range between 0.4 to 1.4 gms /10 min and shall be compatible for fusing on PE 100 distribution line manufactured according to the relevant national or international standards. The polymer used should comply with the requirements of BS 3412 and/or BS EN 12201-1.
2) All the electro fusion fittings should be manufactured in Blue PE80 - material which should be compatible with the distribution mains.
3) The tapping saddles to have drilling cutter which enable s tapping even below the maximum permissible operating pressure; the disc cut out of the pipe wall is permanently kept in the drilling cutter.
4) The products shall comply with the requirements of BS EN 12201-3: 2003, BS EN 1555-3 or ISO 8085-3.
5) All the fittings shall be of SDR 11 rating

   .The product group used for drinking water applications should have undergone type test by WRc-NSF, U.K. according to BS 6920 and a certificate from either WRc-NSF or WRAS (Water Regulations Advisory Scheme) should be available evidencing this fact/ equivalent institutions approved by the employer.
6) All the products shall be manufactured by injection molding using virgin compounded PE 80 (MDPE) polymer having a melt flow rate between 0.5 – 1.1 grams/10 minutes and shall be compatible for fusing on PE 80 distribution mains manufactured according to the relevant national or international standards. The polymer used should comply with the requirements of BS 3412 and/or BS EN 12201 -1.
7) The fittings intended for water distribution applications shall be coloured blue for the clear identification of the services.
8) All the electro fusion products should be individually packed so that they can be used instantaneously at site without additional cleaning process. The protective packing should be transparent to allow easy identification of the fittings without opening the bags.
9) The electro fusion products should be with only a single heating coil to fully electro fuse the fitting to the adjoining pipe or pipe component as applicable. The heating coils shall be terminated at terminal pins of 4.0 or 4.7 millimeter diameter, protected with polyethylene shroud. Each terminal shroud should be additionally protected with polyethylene shroud caps.
10) No heating element shall be exposed and all coils are to be integral part of the body of the fitting. The insertion of the heating element in the fitting should be part of the injection molding process and coils inserted after the injection molding process or attached to the body of the fitting as a separate embedded pad etc. are strictly not acceptable.
11) The pipe fixation shall be achieved by external clamping /suitable devices as directed by the Engineer in charge.
12) The brand name, size, raw material grade, SDR rating and batch identification are to be embedded as part of the injection molding process. Each fitting should also be supplied with a barcode sticker for fusion parameters attached to the body for setting the fusion parameters on a fusion control box. The barcode sticker should also include the fusion and cooling time applicable for the fitting for the manual setting of a manual fusion control box.
13) The fittings should be V-regulated type designed to fuse at a fusion voltage of 40 volts AC.

14) The heating elements should be designed for fusion at any ambient temperatures between -5 to +40 degree centigrade at a constant fusion time i.e. without any compensation of fusion time for different ambient temperatures.
15) A limited path style fusion indicator acting for each fusion zone as visual recognition of completed fusion cycle should be incorporated into the body of each fitting near the terminals. The fusion indicators should not allow the escape of the molten polymer through them during or after the fusion process.
16) All the sockets in the electro fusion fittings should include a method of tapping controlling the pipe penetration (pipe positioner/stopper).
17) The EF tapping ferrules should be the top loading type which are to be clamped on the mains for fusion using the custom made top loading clamps exerting 1500N (150 kilograms approximately) top load.
18) The tapping ferrules should be supplied with suitable adaptors for proper positioning of the top-loading clamp into the saddle.
19) The Torque required to operate the cutter after fusion of the PE mains should not exceed 45 N-m.
20) The separate cutter should be designed in such a way that the cut coupon is not allowed to fall into the pipeline and is retained inside the body of the cutter providing a positive sealing of the hole in the cutter head for pressure testing.
21) The tapping ferrules will have female threaded outlet to connect necessary compression fittings for further connecting MDPE Pipe in House connection.
22) The threaded outlet should be from sizes ½" to 1" BSP to suit the required House Service Connections.
23) The outlets should be reinforced with female threaded metal inserts of SS 304.

WS-H- 21.2.2.5.0 :- MDPE Pipes

These specifications are for MDPE Blue PE 80 pipes for House Service connections of Dia 20 mm to 32 mm OD.

WS-H- 21.2.2.5.1 :- Raw Material

Raw material used to manufacture MDPE Blue pipes shall be virgin natural Resin PE 80 containing those anti-oxidants. UV stabilizers and pigments necessary for manufacturing to ISO 4427 standard. The PE 80 Resin shall have MRS of 8 Mpa.

Effects on water quality: MDPE PE 80 Blue pipes shall confirm to clause 3.5 of ISO 4427 Pipes for House connection on Distribution system. Raw material used to manufacture MDPE Blue pipes shall be virgin natural Resin PE 80 containing those anti-oxidants. UV stabilizers and pigments necessary for manufacturing to ISO 4427 standard. The PE 80 Resin shall have MRS of 8 Mpa. Also the pipes to be tested to comply with BS 6920 specifications in any of the laboratories like DVGW/KIWA/SPGN/WRc-NSF with certificate of approval for its use with potable water. The colour of MDPE PE 80 pipes shall be Blue confirming to clause 3.2 of ISO 4427 :1996. The MDPE PE 80 Blue pipes shall confirm to clause 3.5 of ISO 4427 for conveyance of water for Human Consumption. Also the pipes intended for conveyance of potable water for Human consumption to be tested to comply with BS 6920 specifications in any of the laboratories like DVGW/KIWA/SPGN/WRc-NSF and certificate of compliance to be produced for the following parameters.

a) Odour and Flavor of water

b) Appearance of water
c) Growth of Micro Organism
d) Extraction of substances that may be of concern to Public Health (Cyto Toxicity)
e) Extraction of Metals

WS-H- 21.2.2.5.2 :- Pressure Rating:

The pressure rating of MDPE Blue PE 80 pipes shall be confirming to clause 4.1of ISO 4427 1996.

WS-H- 21.2.2.5.3 :- Colour of Pipes

The colour of MDPE PE 80 pipes shall be Blue confirming to clause 3.2 of ISO 4427 : 1996.

WS-H- 21.2.2.5.4 :- Dimensions:

The pipe dimensions shall be as per latest revisions of clause 4.1 of ISO 4427: 1996 and pipes upto diameters 32 mm shall be supplied in coils of 300 mtrs. The internal diameter, wall thickness, length and other dimensions of pipes shall be as per relevant tables of ISO 4427 : 1996. Each pipe shall be of uniform thickness throughout its length. The wall thickness of the PE 80 pipes shall be as per the table given below:

Nominal Dia of MDPE pipe (mm)	**PN rating**	**Wall thickness**	
		Minimum	**Maximum**
20	PN 16	2.3	2.8
25	PN 12.5	2.3	2.8
32	PN 12.5	3	3.5

The dimension tolerances shall be as per ISO 4427 clause 4.1.3

WS-H- 21.2.2.5.5 :- Performance requirements:

The pipe supplied should have passed the acceptance test as per ISO 4427. The manufacture should provide the test certificates for the following tests.

1) Melt Flow Rate
2) Density
3) Oxidation and induction test
4) Hydrostatic Test
5) Pigment dispersion Test
6) Longitudinal Reversion Test.

These tests should be performed in the in-house laboratory of the pipe manufacture. The employer will depute third party inspection Agency to the pipe manufacturing facility of the manufacturer to inspect the pipes as per QAP approved by Engineer In Charge, in charge.

WS-H- 21.2.2.5.6 :- BUTT WELDING PROCEDURE FOR PE PIPES (MDPE OR HDPE)

Jointing between MDPE / HDPE pipes and specials shall be done as per the latest IS 7634 part II. Method of jointing between the pipes to pipes and pipes to specials shall be with butt fusion welding using automatic or semi automatic, hydraulically operated, superior quality butt fusion machines which will ensure good quality butt fusion welding of MDPE / HDPE pipes. For pipes 160 mm dia and above, Hydraulic Jack must be used in butt welding.

WS-H- 21.2.2.5.7 :- PRINCIPLE

The saddles and the couplers for HSC shall be joined using good quality EF welding equipment with bar code sensing facility. The pipes to be joined are held in clamps which grips and re rounds the pipe, pipe ends are prepared by planning with an electrically driven trimmer. Then the pipe surfaces are heated using an electrically/powered non-stick heater plates. When molten, the pipe ends are brought together and held under pressure until cooled.

WS-H- 21.2.2.5.7:. Procedure:

Step 1	Wipe the inside and outside surface of the pipe with clean dry cloth to remove any dirt on the pipe. Pipe ends shall be cleaned using knife edge.
Step 2	Install the pipes on the welding machine clamps. Check alignment. Adjust to get perfect alignment of the mating surfaces.
Step 3	Face the pipe ends using the electrically driven facer.
Step 4 :	Check alignment once again after facing.
Step 5 :	Inserttheheaterplateandbringthemovablepipeendclosetoheater platesuch thatboth the ends in firmcontactwith the heaterplate.
Step 6 :	Heatthepipeuntilproperlysizedmeltbeadisformedonthebothpipe ends.
Step 7 :	Remove the heater plate and bring close the pipe ends as quick as possible underthe desired pressure.
Step 8 :	Allowthe coolingtime underpressureand then remove the clamps.
Step 9 :	Checkthe bead pattern to ensurea good qualityjoint.

WS-H- 21.2.2.6.1 UPVC Pipes

Scope

The pipes are made of unplasticized polyvinyl chloride (uPVC) with socket(s) suitable for elastomeric sealing ring type joints intended to be used for buried water mains with ambient atmospheric temperature reaching up to 50°C and soil surface temperature rising more than 65°C. Pipes and specials are as per IS 4985

WS-H- 21.2.2.6.2 :- Material

The material from which the pipes are made shall consist substantially of unplasticized polyvinyl chloride conforming to IS: 10151, to which may be added only those additives that are absolutely needed to facilitate the manufacture of the polymer, and the production of sound, durable pipes of good surface, finish, mechanical strength and opacity.

The total quantity of additives like plasticizers, stabilizers, lubricants and fillers shall not exceed more than 7.0%.

The bulk density of uPVC pipe shall be 1.39 to 1.44 g/ cm3.

PVC resin of suspension grade K-66/K-67 shall be used for extrusion of u PVC pipe.

WS-H- 21.2.2.6.3 :- Classification

The pressure rating of pipes shall be of class-3 and class-4 in accordance with IS: 4985 with a maximum continuous working pressure at 27 0 C of 6 and 10 kg/cm2

WS-H- 21.2.2.6.4 :-Physical, Mechanical & chemical properties

The dimensions and tolerances of pipes shall comply to clauses of IS: 4985.

The colour of the pipes shall be dark grey.

Influence on water intended for human consumption shall be governed by IS: 12235.

The pipes and integral sealing ring will confirm to internal hydrostatic pressure in accordance with Clause 11.1 and sampling as per annex D of IS 4985

WS-H- 21.2.2.6.5 :- Tests and conformity criteria

Quality assurance from the manufacturer

The following in house tests shall be carried out on the raw material:

- grade (K-value)
- particle size distribution
- bulk density of resin
- bulk density of compound

The manufacturer will also have the following tests conducted from Standard Test Laboratory

- Effect on water quality
- Internal Hydrostatic Test (Type)

WS-H- 21.2.2.6.6 :- Markings

Each pipe shall be clearly marked as indicated below.

- Manufacturers name and trademark
- Outside diameter in mm.
- Class of pipe and pressure rating
- Month and year of manufacturing
- Length of pipe
- Marking of insert depth of spigot

Each pipe shall also be marked in centre strip as circumference 1” wide at intervals not more than 3 meters to show the class of pipe.

- Class 3 – Green
- Class 4 – Brown

WS-H- 21.2.2.6.7 :- Supply, Packing and transport

The pipes will be supplied with one end plain with chamfer and other end socket suitable for elastomeric sealing ring type joints in accordance with IS: 4985.

Each pipe shall be supplied along with a rubber ring suitable for the socket for elastomeric sealing ring type joints.

The pipes shall be transported to the store and site by trucks in pre packed bundles to ensure adequate protection during transport.The socket and spigot end of all the pipes shall be provided with tightly fitted end caps, At the time of packing and stacking of pipes the sockets shall be alternated within the pile and shall project sufficiently for the pipes to be correctly supported along their whole length. The pipes shall rest uniformly on the vehicle bed over their whole length during transport, carefully placed and firmly secured against unwarranted movement during transportation to the satisfaction of Engineer In Charge, In charge

WS-H- 21.2.2.6.8 :- Specials for UPVC Pipe System.

UPVC specials

- Manufacturing and type of sealing joint
- All the UPVC fittings shall be fabricated from class-4 UPVC pipes only.
- Fittings shall be of the same make as that of pipes, injection moulded and shall conform to IS:14735.
- The socket dimensions shall be in accordance with the pipe sockets. The rubber sealing rings for pipe/specials shall be in accordance with the specifications as stated in Clause 16.3.

WS-H- 21.2.2.6.9 :- Laying and Jointing

The pipes shall be laid and clamped to wooden plugs fixed above the surface of the wall. Alternatively plastic clamps of suitable designs shall be preferred. Provision shall be made for the effect of thermal movement by not gripping or disturbing the pipe at supports between the anchors for suspended pipes. The supports shall allow the repeated movements to take place without abrasion.

Jointing for UPVC pipes shall be made by means of solvent cement for horizontal lines and 'O' rubber ring for vertical line. The type of joint shall be used as per site conditions / direction of the Owner's site representative. Where UPVC pipes are to be used for rain water pipes, the pipe shall be finished with GI adopter for insertion in the RCC slab for a water proof joint complete as directed by Owner's site representative.

WS-H- 21.2.2.7.0 :- GI (Only for GI pipe distribution)pipe and specials for House Service Connection

Note: GI pipe House service connection shall be used only when Distribution main is og GI Pipe

WS-H- 21.2.2.7.1 :- Galvanised Iron Pipes

The pipes (tubes) shall be galvanised mild steel hot finished seamless (HFS) or welded (ERW) HRIW or HFW screwed and socketed conforming to the requirements of IS 1239 Part-I for medium grade. They shall be of the diameter (nominal bore) specified in the description of the item, the sockets shall be designated by the respective nominal bores of the pipes for which they are intended.

WS-H- 21.2.2.7.2 :- Galvanising shall conform to IS 4736 :

The zinc coating shall be uniform adherent, reasonably smooth and free from such imperfections as flux, ash and dross inclusions, bare batches, black spots, pimples, lumping runs, rust stains, bulky white deposits and blisters. The pipes and sockets shall be cleanly finished, well galvanized in and out and free from cracks, surface flaws laminations and other defects. All screw threads shall be clean and well cut. The ends shall be cut cleanly and square with the axis of the tube.

The dimensions and weights of pipes and sockets and tolerances shall be as prescribed in respective IS

All screwed tubes and sockets shall have pipe threads conforming to the requirements of IS 554.

Screwed tubes shall have taper threads while the sockets shall have parallel threads.

All tubes shall withstand a test pressure of 50 Kg/sq.cm without showing defects of any kind.

WS-H- 21.2.2.7.3 :- Fittings :

The fittings shall be of mild steel tubular or wrought steel fittings conforming to IS 1239 (Part-2) or as specified. The fittings shall be designated by the respective nominal bores of the pipes for which they are intended.

WS-H- 21.2.2.8 :- Yarn (Spun)

Spun yarn shall be of clean hemp and of good quality. It shall be soaked in hot coal tar or bitumen and cooled before use.

WS-H- 21.3 :- Mode of Measurement and Payment –

The measurement and payment of this item shall be taken as per number basis of completed work as per description of item, specification and drawing. Payment will be made per number of service connections made. Unit Price includes labour required, excavation, fitting,

refilling, closing the water supply in that area, dewatering and restarting the water supply, transportation. 15 % amount shall be with held till satisfactory hydraulic testing.

"परिशिष्ट-ड"- अंदाजपत्रक उदाहरण-

Name of work: Providing & Making 15 mm Dia Water Service Connection For AnganWadi Located at 25 m distance from Village/Town Distribution Line.

(With Road Crossing)

ABSTRACT SHEET

Sr. No.	Description	Qty.	Unit	Basic Rate	Amount (Rs)
A)	**Making Consumer Service Connection**				
	Item no 1: HSC Item: Providing and making **UPVC**/**MDPE pipe consumer service** connection on Distribution main by drilling hole with suitable means , including all labour , **UPVC/MDPE** Pipe of required length with or without Road xing as described below, including cost of specials like Saddle/Clamp Saddle of suitable material, and diameter suitable for Distribution main, 15mm**/20mm/25mm respective** Dia Heavy duty Brass/Polyprophylyne(Twin Jacketed) Ferrule /FCV, Male and Female thread adapter Elbow, Bends,couplers ,Tees, Clamps of suitable material and sundry materials as per requirment, including providing and fixing medium duty 15.mm brass bib tap, **GI casing pipe of suitable minimum 32mm/40mm/50mm respective dia of required length for Road crossing**, including requird labour for excavation in all types of strata up to the depth of 0.75m or as per site requirement,all types of plumbing fittings, refilling , Closing the water supply in that area, dewatering, hydraulic testing and restarting the water supply ,transportation of material etc. complete as directed by Engineer in charge.				
	As per approved Rate	1	No	2382.00	2382.00

B)	**Estimate for additional length to be covered**				
2	Providing, Fixing Testing and Commissioning MDPE PE 80 Blue pipes shall confirm to clause 3.5 of ISO 4427 Pipes for House connection on Distribution system.Raw material used to manufacture MDPE Blue pipes shall be virgin natural Resin PE 80 containing those anti-oxidants. UV stabilizers and pigments necessary for manufacturing to ISO 4427 standard. The PE 80 Resin shall have MRS of 8 Mpa. Also the pipes to be tested to comply with BS 6920 specifications in any of the laboratories like DVGW/KIWA/SPGN/WRc-NSFwith certificate of approval for its use with potable water.The colour of MDPE PE 80 pipes shall be Blue confirming to clause 3.2 of ISO 4427 : 1996.				
	MJP SOR Pune 19-20 , Page No.161, Item No.1.a).i))				
	for 15 mm Service connection				
i	15 mm MDPE Pipe(PN 16 (SDR 9))	13.00	Rmt	23.00	299.00
3	Providing, fixing and testing Polyprophelyne (PP) female threder adoptor with SS304 insert, PP Elbow, Both side compression end Elbow, Bends, couplers, Tees, clamps and sundry materias. This item include all PP, UPVC, CPVC, HDPE, MDPE and GI specials required as per site conditions to make 15 mm dia HSC.				
	For all types of Additional specials, bends, tees, etc.				
	for 15 mm Dia MDPE Pipe line (10% of above Cost)	Lump	job	29.90	29.90
4	Excavation for foundation / pipe trenches in earth, soils of all types sand, gravel and soft murum, hard murum, boulders, WBM roads including removing the excavated materials up to a distances of 50 m and lifts as below, stacking and spreading as directed, normal dewatering preparing the bed for foundation and excluding back feeling etc. complete				
	(MJP SOR Pune 19-20, Avg Item No 1,2,3, Page No.51				
i.	Lift 0 to 1.5 m	3.90	Cum	165.00	643.50

5	Filling in plinth and floors murum bedding in trenches with approved murum from excavated materials from foundation 15cm to 20cm layers including watering and compaction complete.				
	(MJP SOR Pune 19-20,Item No.16, Page No. 54)	0.00	Cum	73.00	0.09
6	**<u>Lowering, Laying and Jointing H. D. P. E./M. D. P. E. pipes</u>** in proper position including all specials by compression fitting/electrofusion and butt fusion jointing procedure as per relevent IS Code complete with all materials for jointing procedure like Electrofusion machine, Electric heater/butt fusion welding machine with hydraulic jack, top loading clamp etc. and all labours as directed by engineer in charge as per IS-7634 Part II				
	MJP SOR Pune 19-20 , Page No.155, Item No.2.i))				
A	for 15 mm Service connection				
i	15 mm MDPE Pipe(PN 16 (SDR 9))	13.00	Rmt	11.00	143.00
7	**<u>Hydraulic testing of H. D. P. E./ M. D. P. E. pipe line</u>** to specified pressure including cost of all materials and labour and water for testing for specified length including cutting, placing end cap making arrangement for filling safe water using reciprocating type pumps which should be able to provide specified test pressure gauges and other necessary equipments, labour, operation charges, etc. required for testing. The rate under this item shall also include cost of retesting, if necessary and reinstating to original position..				
	MJP SOR Pune 19-20 , Page No.156, Item No.3.i))				
	for 15 mm Service connection				
	15 mm MDPE Pipe(PN 16 (SDR 9))	0.013	Km	1128	14.66

8	Providing and casting in suitu C.C. of trap / granite /quartizite / gnesis metal of approved quality for RCC works as per detailed drawings and design or as directed drawings and design or as directed including watering, including watering centering, form work compaction, finishing the formed surfaces with cm. 1:3 of sufficient minimum thick surface wherever necessary or roughening if special finish is to be provided and curing etc. complete. M-200 (For thrust blocks)				
	(MJP SOR Pune 19-20, Item No-2, Page no.61)	0.07	Cum	5895.00	431.07
9	Refilling the trenches with available excavated stuff with soft material first over pipeline and then hard material in 15 cm layers with all leads and lifts including consolidation, surcharging, etc. complete				
	(MJP SOR Pune 19-20,Item No.15, Page No.54)	3.89	Cum	73.00	284.32
	Total (A+B)				**4227.54**
	Add for GST @ 12%				**507.30**
	Sub-Total				**4734.84**
	Add for Contingency @ 3%				**142.05**
	Total				**4876.89**
	Say				**4877.00**

Name of work: Providing & Making 15 mm Dia Water Service Connection For AnganWadi Located at 25 m distance from Village/Town Distribution Line.

(With Road Crossing)

MEASUREMENT SHEET

Sr. No.	Description	No.	L	B	D	Qty.	unit
A)	**Making Consumer Service Connection**						
	Item no 1: HSC Item:Providing and making **UPVC/MDPE pipe consumer service** connection on Distribution main by drilling hole with suitable means , including all labour , **UPVC/MDPE** Pipe of required length with or without Road xing as described below, including cost of specials like Saddle/Clamp Saddle of suitable material, and diameter suitable for Distribution main, 15mm**/20mm/25mm respective** Dia Heavy duty Brass/Polyprophylyne(Twin Jacketed) Ferrule /FCV, Male and Female thread adapter Elbow, Bends,couplers ,Tees, Clamps of suitable material and sundry materials as per requirment, including providing and fixing medium duty 15.mm brass bib tap, **GI casing pipe of suitable minimum 32mm/40mm/50mm respective dia of required length for Road crossing**, including requird labour for excavation in all types of strata up to the depth of 0.75m or as per site requirement,all types of plumbing fittings, refilling , Closing the water supply in that area, dewatering, hydraulic testing and restarting the water supply ,transportation of material etc. complete as directed by Engineer in charge.						
	HSC for 15 mm Dia without Road Crossing	**1**	**1**			**1**	**No**
B)	**Estimate for additional length to be covered**						
a)	**Length of Anganwadi From Village/Town distrbution main**	**1**	**25**			**25**	**Rmt**
b)	**Distance covered under HSC RA (with road Crossing**	**1**	**12**			**12**	**Rmt**

	Balance length to be covered under addotional connection Pipeline (a-b)	**1**	**13**			**13**	**Rmt**
	Material						
2	Providing, Fixing Testing and Commissioning MDPE PE 80 Blue pipes shall confirm to clause 3.5 of ISO 4427 Pipes for House connection on Distribution system.Raw material used to manufacture MDPE Blue pipes shall be virgin natural Resin PE 80 containing those anti-oxidants. UV stabilizers and pigments necessary for manufacturing to ISO 4427 standard. The PE 80 Resin shall have MRS of 8 Mpa. Also the pipes to be tested to comply with BS 6920 specifications in any of the laboratories like DVGW/KIWA/SPGN/WRc-NSFwith certificate of approval for its use with potable water.The colour of MDPE PE 80 pipes shall be Blue confirming to clause 3.2 of ISO 4427 : 1996.						
	MJP SOR Pune 19-20 , Page No.161, Item No.1.a).i))						
	for 15 mm Service connection						
i	15 mm MDPE Pipe(PN 16 (SDR 9))	1	13.00			13.00	Rmt
					Total	**13.00**	**Rmt**
3	Providing, fixing and testing Polyprophelyne (PP) female threder adoptor with SS304 insert, PP Elbow, Both side compression end Elbow, Bends, couplers, Tees, clamps and sundry materias. This item include all PP, UPVC, CPVC, HDPE, MDPE and GI specials required as per site conditions to make 15 mm dia HSC.						
	For all types of Additional specials, bends, tees, etc.						
a	for 15 mm Dia MDPE Pipe line					Lump	Kg
					Total	**Lump**	**Kg**

4	Excavation for foundation / pipe trenches in earth, soils of all types sand, gravel and soft murum, hard murum, boulders, WBM roads including removing the excavated materials up to a distances of 50 m and lifts as below, stacking and spreading as directed, normal dewatering preparing the bed for foundation and excluding back feeling etc. complete						
i.	Lift 0 to 1.5 m	1	13.00	0.60	0.50	3.90	Cum
					Total	**3.90**	**Cum**
5	Filling in plinth and floors murum bedding in trenches with approved murum from excavated materials from foundation 15cm to 20cm layers including watering and compaction complete.						
		1	0.01	0.60	0.15	0.00	Cum
					Total	**0.00**	**Cum**
6	**Lowering, Laying and Jointing H. D. P. E./M. D. P. E. pipes** in proper position including all specials by compression fitting/electrofusion and butt fusion jointing procedure as per relevent IS Code complete with all materials for jointing procedure like Electrofusion machine, Electric heater/butt fusion welding machine with hydraulic jack, top loading clamp etc. and all labours as directed by engineer in charge as per IS-7634 Part II						
A	for 15 mm Service connection						
i	15 mm MDPE Pipe(PN 16 (SDR 9))	1	13.00			13.00	Rmt
					Total	**13.00**	**Rmt**
7	**Hydraulic testing of H. D. P. E./ M. D. P. E. pipe line** to specified pressure including cost of all materials and labour and water for testing for specified length including cutting, placing end cap making arrangement for filling safe water using reciprocating type pumps which should be able to provide specified test pressure gauges and other necessary equipments, labour, operation charges, etc. required for testing. The rate under this item shall also include cost of retesting, if necessary and reinstating to original position..						
	for 15 mm Service connection						
	15 mm MDPE Pipe(PN 16 (SDR 9))	1	0.01			0.013	Km

					Total	**0.013**	**Km**
8	Providing and casting in suitu C.C. of trap / granite /quartizite / gnesis metal of approved quality for RCC works as per detailed drawings and design or as directed drawings and design or as directed including watering, including watering centering, form work compaction, finishing the formed surfaces with cm. 1:3 of sufficient minimum thick surface wherever necessary or roughening if special finish is to be provided and curing etc. complete. M-200 (For thrust blocks)						
		1	3.25	0.15	0.15	0.07	Cum
					Total	**0.07**	**Cum**
9	Refilling the trenches with available excavated stuff with soft material first over pipeline and then hard material in 15 cm layers with all leads and lifts including consolidation, surcharging, etc. complete						
	Total Excavation					3.90	Cum
	Deductions	13	0.785	0.020	0.020	0.004	Cum
	Murum bedding	1	0.013	0.600	0.150	0.001	Cum
	Total Deductions					0.01	Cum
	Net Qty					**3.89**	**Cum**

Name of work: Providing & Making 15 mm Dia Water Service Connection For AnganWadi Located at 25 m distance from Village/Town Distribution Line.

(Without Road Crossing)

ABSTRACT SHEET

Sr. No.	Description	Qty.	Unit	Rate (Rs)	Amount (Rs)
A)	Making Consumer Service Connection				
	Item no 1: HSC Item: Providing and making **UPVC/MDPE pipe consumer service** connection on Distribution main by drilling hole with suitable means , including all labour , **UPVC/MDPE** Pipe of required length with or without Road xing as described below, including cost of specials like Saddle/Clamp Saddle of suitable material, and diameter suitable for Distribution main, 15mm**/20mm/25mm respective** Dia Heavy duty Brass/Polyprophylyne(Twin Jacketed) Ferrule /FCV, Male and Female thread adapter Elbow, Bends,couplers ,Tees, Clamps of suitable material and sundry materials as per requirment, including providing and fixing medium duty 15.mm brass bib tap, **GI casing pipe of suitable minimum 32mm/40mm/50mm respective dia of required length for Road crossing**, including requird labour for excavation in all types of strata up to the depth of 0.75m or as per site requirement,all types of plumbing fittings, refilling , Closing the water supply in that area, dewatering, hydraulic testing and restarting the water supply ,transportation of material etc. complete as directed by Engineer in charge.				
	Rate as per Approved RA	1	No	1537.00	1537.00
B)	**Estimate for additional length to be covered**				

2	Providing, Fixing Testing and Commissioning MDPE PE 80 Blue pipes shall confirm to clause 3.5 of ISO 4427 Pipes for House connection on Distribution system.Raw material used to manufacture MDPE Blue pipes shall be virgin natural Resin PE 80 containing those anti-oxidants. UV stabilizers and pigments necessary for manufacturing to ISO 4427 standard. The PE 80 Resin shall have MRS of 8 Mpa. Also the pipes to be tested to comply with BS 6920 specifications in any of the laboratories like DVGW/KIWA/SPGN/WRc-NSFwith certificate of approval for its use with potable water.The colour of MDPE PE 80 pipes shall be Blue confirming to clause 3.2 of ISO 4427 : 1996.				
	MJP SOR Pune 19-20 , Page No.161, Item No.1.a).i))				
	for 15 mm Service connection				
i	15 mm MDPE Pipe(PN 16 (SDR 9))	17.00	Rmt	23.00	391.00
3	Providing, fixing and testing Polyprophelyne (PP) female threder adoptor with SS304 insert, PP Elbow, Both side compression end Elbow, Bends, couplers, Tees, clamps and sundry materias. This item include all PP, UPVC, CPVC, HDPE, MDPE and GI specials required as per site conditions to make 15 mm dia HSC.				
	For all types of Additional specials, bends, tees, etc.				
	for 15 mm Dia MDPE Pipe line (10% of above Cost)	Lump	job	39.10	39.10
4	Excavation for foundation / pipe trenches in earth, soils of all types sand, gravel and soft murum, hard murum, boulders, WBM roads including removing the excavated materials up to a distances of 50 m and lifts as below, stacking and spreading as directed, normal dewatering preparing the bed for foundation and excluding back feeling etc. complete				
	(MJP SOR Pune 19-20, Avg Item No 1,2,3, Page No.51				
i.	Lift 0 to 1.5 m	5.10	Cum	165.00	841.50

5	Filling in plinth and floors murum bedding in trenches with approved murum from excavated materials from foundation 15cm to 20cm layers including watering and compaction complete.				
	(MJP SOR Pune 19-20,Item No.16, Page No. 54)	0.00	Cum	73.00	0.11
6	**Lowering, Laying and Jointing H. D. P. E./M. D. P. E. pipes** in proper position including all specials by compression fitting/electrofusion and butt fusion jointing procedure as per relevent IS Code complete with all materials for jointing procedure like Electrofusion machine, Electric heater/butt fusion welding machine with hydraulic jack, top loading clamp etc. and all labours as directed by engineer in charge as per IS-7634 Part II				
	MJP SOR Pune 19-20 , Page No.155, Item No.2.i))				
A	for 15 mm Service connection				
i	15 mm MDPE Pipe(PN 16 (SDR 9))	17.00	Rmt	11.00	187.00
7	**Hydraulic testing of H. D. P. E./ M. D. P. E. pipe line** to specified pressure including cost of all materials and labour and water for testing for specified length including cutting, placing end cap making arrangement for filling safe water using reciprocating type pumps which should be able to provide specified test pressure gauges and other necessary equipments, labour, operation charges, etc. required for testing. The rate under this item shall also include cost of retesting, if necessary and reinstating to original position..				
	MJP SOR Pune 19-20 , Page No.156, Item No.3.i))				
	for 15 mm Service connection				
	15 mm MDPE Pipe(PN 16 (SDR 9))	0.017	Km	1128	19.18

8	Providing and casting in suitu C.C. of trap / granite /quartizite / gnesis metal of approved quality for RCC works as per detailed drawings and design or as directed drawings and design or as directed including watering, including watering centering, form work compaction, finishing the formed surfaces with cm. 1:3 of sufficient minimum thick surface wherever necessary or roughening if special finish is to be provided and curing etc. complete. M-200 (For thrust blocks)				
	(MJP SOR Pune 19-20, Item No-2, Page no.61)	0.10	Cum	5895.00	563.71
9	Refilling the trenches with available excavated stuff with soft material first over pipeline and then hard material in 15 cm layers with all leads and lifts including consolidation, surcharging, etc. complete				
	(MJP SOR Pune 19-20,Item No.15, Page No.54)	5.09	Cum	73.00	371.80
	Total (A+B)				**3950.40**
	Add for GST @ 12%				**474.05**
	Sub-Total				**4424.44**
	Add for Contingency @ 3%				**132.73**
	Total				**4557.18**
	Say				**4557.00**

Name of work: Providing & Making 15 mm Dia Water Service Connection For AnganWadi Located at 25 m distance from Village/Town Distribution Line.

(Without Road Crossing)

MEASUREMENT SHEET

Sr. No.	Description	No.	L	B	D	Qty.	unit
A)	**Making Consumer Service Connection**						
	Item no 1: HSC Item:Providing and making **UPVC/MDPE pipe consumer service** connection on Distribution main by drilling hole with suitable means , including all labour , **UPVC/MDPE** Pipe of required length with or without Road xing as described below, including cost of specials like Saddle/Clamp Saddle of suitable material, and diameter suitable for Distribution main, 15mm**/20mm/25mm respective** Dia Heavy duty Brass/Polyprophylyne(Twin Jacketed) Ferrule /FCV, Male and Female thread adapter Elbow, Bends,couplers ,Tees, Clamps of suitable material and sundry materials as per requirment, including providing and fixing medium duty 15.mm brass bib tap, **GI casing pipe of suitable minimum 32mm/40mm/50mm respective dia of required length for Road crossing**, including requird labour for excavation in all types of strata up to the depth of 0.75m or as per site requirement,all types of plumbing fittings, refilling , Closing the water supply in that area, dewatering, hydraulic testing and restarting the water supply ,transportation of material etc. complete as directed by Engineer in charge.						
	HSC for 15 mm Dia without Road Crossing	**1**	**1**			**1**	**No**
B)	**Estimate for additional length to be covered**						
a)	**Length of Anganwadi From Village/Town distrbution main**	**1**	**25**			**25**	**Rmt**

b)	**Distance covered under HSC RA (without road Crossing**	**1**	**8**			**8**	**Rmt**
	Balance length to be covered under addotional connection Pipeline (a-b)	**1**	**17**			**17**	**Rmt**
	Material						
2	Providing, Fixing Testing and Commissioning MDPE PE 80 Blue pipes shall confirm to clause 3.5 of ISO 4427 Pipes for House connection on Distribution system.Raw material used to manufacture MDPE Blue pipes shall be virgin natural Resin PE 80 containing those anti-oxidants. UV stabilizers and pigments necessary for manufacturing to ISO 4427 standard. The PE 80 Resin shall have MRS of 8 Mpa. Also the pipes to be tested to comply with BS 6920 specifications in any of the laboratories like DVGW/KIWA/SPGN/WRc-NSFwith certificate of approval for its use with potable water.The colour of MDPE PE 80 pipes shall be Blue confirming to clause 3.2 of ISO 4427 : 1996.						
	MJP SOR Pune 19-20 , Page No.161, Item No.1.a).i))						
	for 15 mm Service connection						
i	15 mm MDPE Pipe(PN 16 (SDR 9))	1	17.00			17.00	Rmt
					Total	**17.00**	**Rmt**
3	Providing, fixing and testing Polyprophelyne (PP) female threder adoptor with SS304 insert, PP Elbow, Both side compression end Elbow, Bends, couplers, Tees, clamps and sundry materias. This item include all PP, UPVC, CPVC, HDPE, MDPE and GI specials required as per site conditions to make 15 mm dia HSC.						
	For all types of Additional specials, bends, tees, etc.						
a	for 15 mm Dia MDPE Pipe line					Lump	Kg

					Total	Lump	Kg
4	Excavation for foundation / pipe trenches in earth, soils of all types sand, gravel and soft murum, hard murum, boulders, WBM roads including removing the excavated materials up to a distances of 50 m and lifts as below, stacking and spreading as directed, normal dewatering preparing the bed for foundation and excluding back feeling etc. complete						
i.	Lift 0 to 1.5 m	1	17.00	0.60	0.50	5.10	Cum
					Total	**5.10**	**Cum**
5	Filling in plinth and floors murum bedding in trenches with approved murum from excavated materials from foundation 15cm to 20cm layers including watering and compaction complete.						
		1	0.02	0.60	0.15	0.00	Cum
					Total	**0.00**	**Cum**
6	**<u>Lowering, Laying and Jointing H. D. P. E./M. D. P. E. pipes</u>** in proper position including all specials by compression fitting/electrofusion and butt fusion jointing procedure as per relevent IS Code complete with all materials for jointing procedure like Electrofusion machine, Electric heater/butt fusion welding machine with hydraulic jack, top loading clamp etc. and all labours as directed by engineer in charge as per IS-7634 Part II						
A	for 15 mm Service connection						
i	15 mm MDPE Pipe(PN 16 (SDR 9))	1	17.00			17.00	Rmt
					Total	**17.00**	**Rmt**
7	**<u>Hydraulic testing of H. D. P. E./ M. D. P. E. pipe line</u>** to specified pressure including cost of all materials and labour and water for testing for specified length including cutting, placing end cap making arrangement for filling safe water using reciprocating type pumps which should be able to provide specified test pressure gauges and other necessary equipments, labour, operation charges, etc. required for testing. The rate under this item shall also include cost of retesting, if necessary and reinstating to original position..						

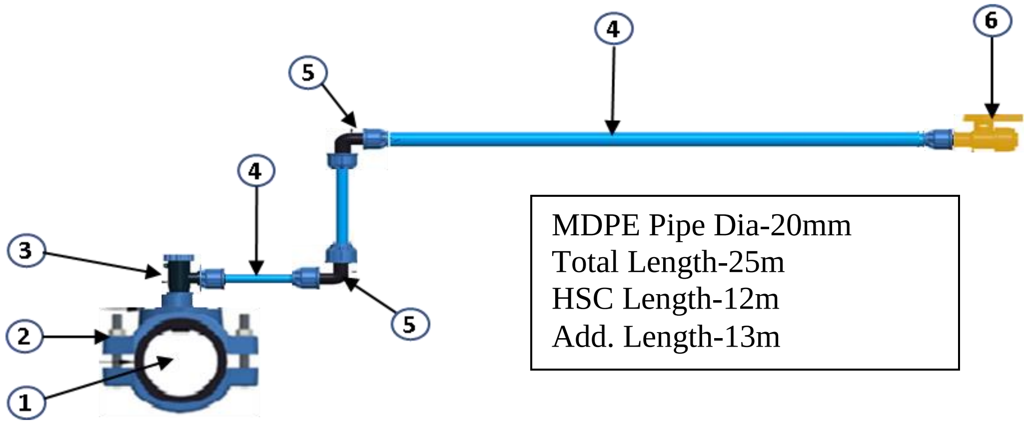
	for 15 mm Service connection						
	15 mm MDPE Pipe(PN 16 (SDR 9))	1	0.017			0.017	Km
					Total	**0.017**	**Km**
8	Providing and casting in suitu C.C. of trap / granite /quartizite / gnesis metal of approved quality for RCC works as per detailed drawings and design or as directed drawings and design or as directed including watering, including watering centering, form work compaction, finishing the formed surfaces with cm. 1:3 of sufficient minimum thick surface wherever necessary or roughening if special finish is to be provided and curing etc. complete. M-200 (For thrust blocks)						
		1	4.25	0.15	0.15	0.10	Cum
					Total	**0.10**	**Cum**
9	Refilling the trenches with available excavated stuff with soft material first over pipeline and then hard material in 15 cm layers with all leads and lifts including consolidation, surcharging, etc. complete						
	Total Excavation					5.10	Cum
	Deductions	17	0.785	0.020	0.020	0.005	Cum
	Murum bedding	1	0.017	0.600	0.150	0.002	Cum
	Total Deductions					0.007	Cum
	Net Qty					**5.09**	**Cum**

"परिशिष्ट-इ"

A Typical Drawing for Estimate

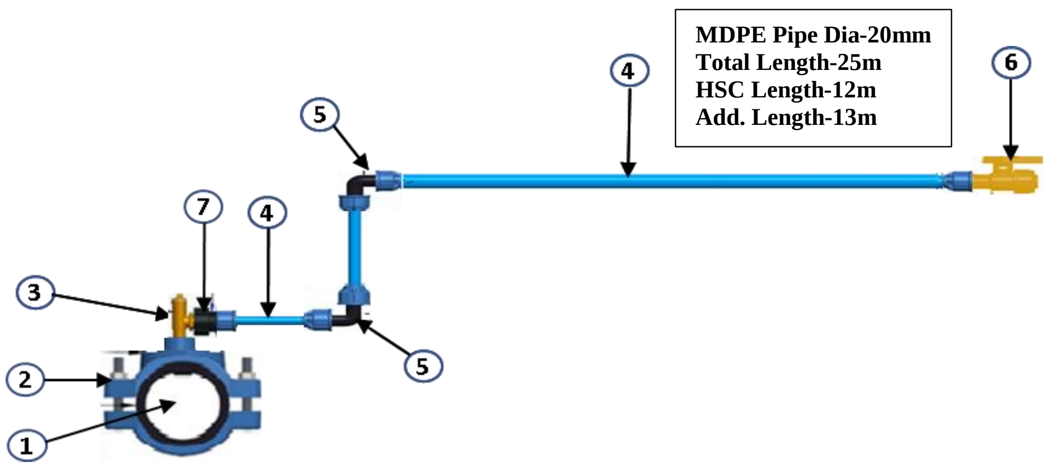
For 15 mm Service Connection (Twin Jacketed PP Ferrule/FCV)

(A) Without Road Crossing



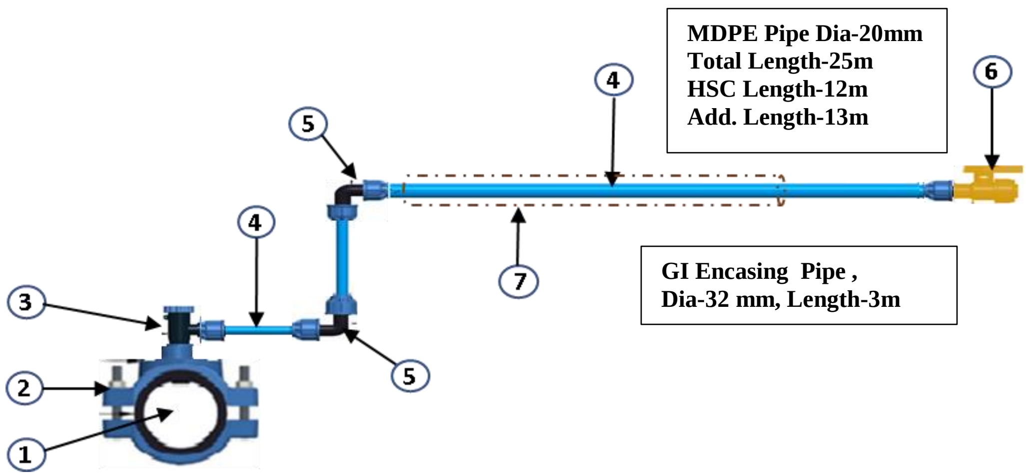
Sr.No.	Description	With road Crossing	Without Road Crossing
1	Main Distribution line	Of (CI/DI/PVC/HDPE) pipe	Of (CI/DI/PVC/HDPE) pipe
2	PP Clamp Saddle	Size suitable for dist. main	Size suitable for dist. main
3	Twin Jacketed PP ferrule/FCV	Dia:15 mm	Dia:15 mm
4	MDPE Pipe line for HSC	Dia:20 mm, Length : 12 m	Dia:20mm, Length : 8 m
	MDPE Pipe line additional length	Dia:20 mm, Length : 13 m	Dia:20 mm, Length : 17 m
5	Both Side Compression end Elbow		
6	Brass Tap	Dia:15 mm	Dia:15 mm

For 15 mm Service Connection (Brass Ferrule/FCV)
A)Without Road Crossing:

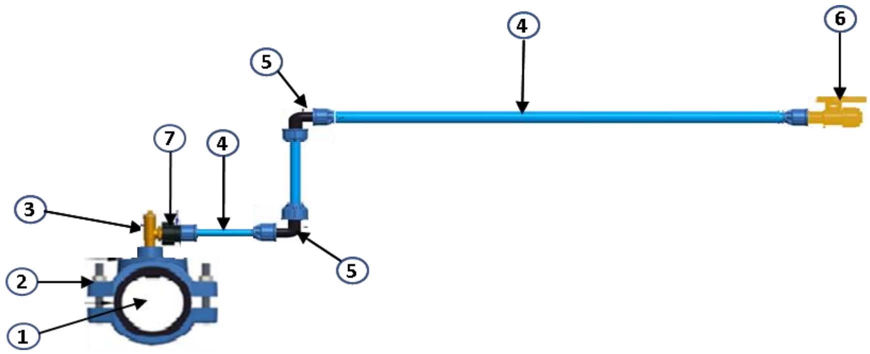


Sr. No.	Description	With road crossing	Without road crossing
1	Main Distribution line	Of (CI/DI/PVC/HDPE) pipe	Of (CI/DI/PVC/HDPE) pipe
2	PP Clamp Saddle	Size suitable for dist. main	Size suitable for dist. main
3	Brass ferrule/FCV	Dia:15 mm	Dia:15 mm
4	MDPE Pipe line for HSC	Dia:20 mm, Length : 12 m	Dia:20mm, Length : 8 m
	MDPE Pipe line additional length	Dia:20 mm, Length : 13 m	Dia:20 mm, Length : 17 m
5	Both Side Compression end Elbow		
6	Brass Tap	Dia:15 mm	Dia:15 mm
7	Female threaded adopter With Ss insert	Dia:15 mm	

For 15 mm Service Connection (Twin Jacketed PP Ferrule/FCV) b)With Road Crossing:



Sr. No.	Description	With road crossing	Without road crossing
1	Main Distribution line	Of (CI/DI/PVC/HDPE) pipe	Of (CI/DI/PVC/HDPE) pipe
2	PP Clamp Saddle	Size suitable for dist. main	Size suitable for dist. main
3	Twin Jacketed PP ferrule/FCV	Dia:15 mm	Dia:15 mm
4	MDPE Pipe line for HSC	Dia:20 mm, Length : 12 m	Dia:20mm, Length : 8 m
	MDPE Pipe line additional length	Dia:20 mm, Length : 13 m	Dia:20 mm, Length : 17 m
5	Both Side Compression end Elbow		
6	Brass Tap	Dia:15 mm	Dia:15 mm
7	GI encasing Pipe for road Crossing	Dia:32 mm, Length : 3 m	



MDPE Pipe Dia-20mm
Total Length-25m
HSC Length-12m
Add. Length-13m

Sr. No.	Description	With road crossing	Without road crossing
1	Main Distribution line	Of (CI/DI/PVC/HDPE) pipe	Of (CI/DI/PVC/HDPE) pipe
2	PP Clamp Saddle	Size suitable for dist. main	Size suitable for dist. main
3	Brass ferrule/FCV	Dia:15 mm	Dia:15 mm
4	MDPE Pipe line for HSC	Dia:20 mm, Length : 12 m	Dia:20mm, Length : 8 m
	MDPE Pipe line additional length	Dia:20 mm, Length : 13 m	Dia:20 mm, Length : 17 m
5	Both Side Compression end Elbow		
6	Brass Tap	Dia:15 mm	Dia:15 mm
7	Female threaded adopter With Ss insert	Dia:15 mm	
8	GI encasing Pipe for road Crossing	Dia:32 mm, Length : 3 m	